

Chapter 5: Configuring Meridian IVR for customer applications

Overview

This chapter provides sample configuration models for Meridian IVR channel assignment. These sample models are provided as guidelines so that the reader can better understand the various configurations.

Shared IVR channel configuration (single application)

Figures 5-1 and 5-2 illustrate a Meridian Mail system with 12 voice channels, which is connected to a Meridian IVR system with 12 logical channels. The 12 voice channels are configured for ALL services. This allows dynamic use of the channels based on the voice service defined in the Meridian Mail VSDN table for the dialed DN. Calls directed to DN 3600 will be answered by Meridian Mail. Likewise, calls which are directed to DN 3000 will be given the IVR treatment for the running Meridian IVR application assigned to an IVR logical channel bearing a CLASS of 1.

The characteristics of this configuration example include the following:

- Meridian Mail voice channels are configured for ALL services.
- All voice channels share the same queue.
- Acquisition type on the Meridian IVR is SHARED for all logical channels.
- The number of Meridian Mail voice channels equals the number of Meridian IVR logical channels.

There are a number of advantages and limitations associated with this type of configuration.

Advantages

- Maximum efficiency is obtained with regard to Meridian Mail channel utilization
- This is the simplest configuration to install and test at a customer site
- Voice prompt modifications are automatically applied on the next call after saving changes
- Recorded messages in the IVR mailbox are immediately available for the next call after recording

Limitations

- Incoming Meridian IVR calls may incur excessive delay in the queue if all Meridian Mail voice channels are busy because of high Voice Messaging traffic
- Associating a Meridian Mail voice channel with a Meridian IVR logical channel is difficult because of random logical channel assignments for each incoming IVR call
- The Meridian Mail system limits configuration to a maximum of 24 shared Meridian IVR logical channels if you are using a 9600 baud ACCESS link

Please refer to **Figure 5-10, "8 Dedicated Voice Mail and 12 Shared Channels,"** on page 5-13 for an example of available Meridian Mail voice channels exceeding the amount of Meridian IVR logical channels.

Figure 5-1
Meridian Mail/Meridian IVR configuration for the single-application shared model

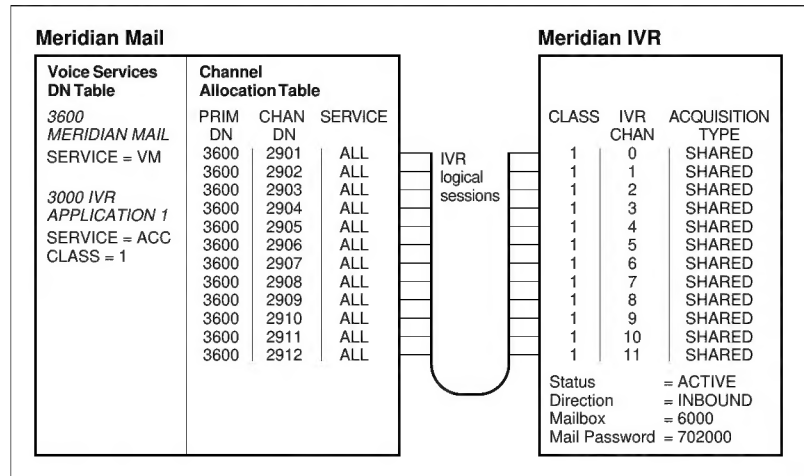
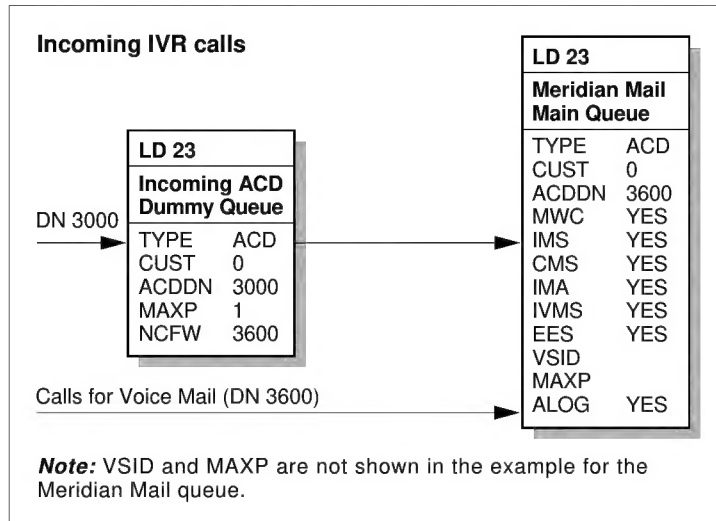


Figure 5-2
Meridian 1/SL-1 ACD configuration for the single-application shared model



Shared IVR channel configuration (multiple applications)

Figures 5-3 and 5-4 illustrate an example of a Meridian Mail system with 12 voice channels, connected to a Meridian IVR with 12 logical channels. The 12 channels are configured for ALL services. This allows dynamic use of the voice channels based on the Meridian Mail VSDN entry for the dialed DN.

Calls directed to DN 3600 will be answered by Meridian Mail. Likewise, calls which are directed to DN 3000 or DN 5000 will be given IVR treatment and assigned the appropriate Meridian IVR application by a selector program (written by the VAD). See Figure 5-5, “Sample application selector program for Meridian IVR” on page 5-7 for an example of a selector program which could be used with the configuration example shown in Figures 5-3 and Figure 5-4.

The characteristics of this configuration example include the following:

- Meridian Mail voice channels are configured for ALL services.
- all voice channels share the same queue.
- for multiple applications, Meridian IVR logical channels are dynamically allocated to their appropriate running application by utilizing a selector program as shown in Figure 5-5. The selector program uses the DIGITS buffer variable in the Meridian IVR to determine which service the caller dialed.
- Acquisition type on the Meridian IVR is SHARED for all logical channels.

There are a number of advantages and limitations associated with this type of configuration.

Advantages

- Maximum efficiency is obtained with regard to Meridian Mail voice channel utilization.
- Using a selector program, an almost unlimited number of applications can be made available to an incoming call based on the DIGITS buffer content (which contains the originally dialed DN).
- Voice prompt modifications are automatically applied on the next call after saving changes.
- Recorded messages in the IVR mailbox are immediately available for the next call after recording.

Limitations

- Incoming Meridian IVR calls may incur excessive delays in the queue if all Meridian Mail voice channels are busy because of high voice messaging traffic.
- Associating a Meridian Mail voice channel to a Meridian IVR logical channel is difficult because of random logical channel assignments for each Meridian IVR call.
- The Meridian Mail system limits this configuration to a maximum of 24 shared Meridian IVR logical channels for a 9600 baud ACCESS link.

Figure 5-3
Meridian Mail/Meridian IVR configuration for the multiple applications shared model

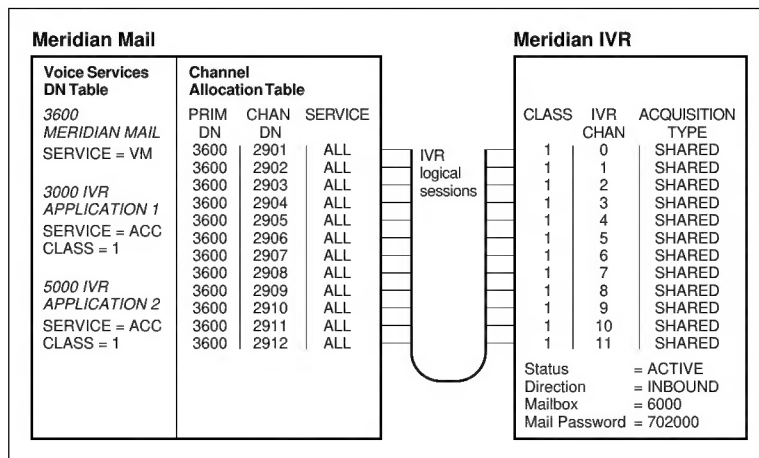


Figure 5-4
Typical Meridian 1/SL-1 ACD configuration for the multiple applications shared model

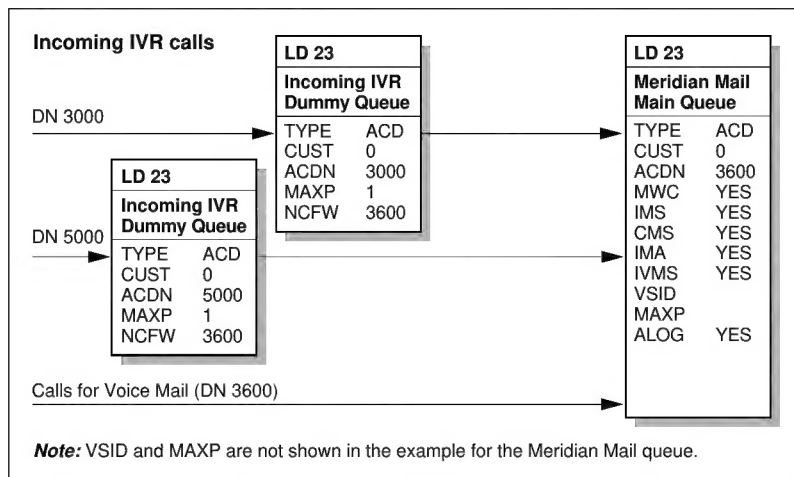
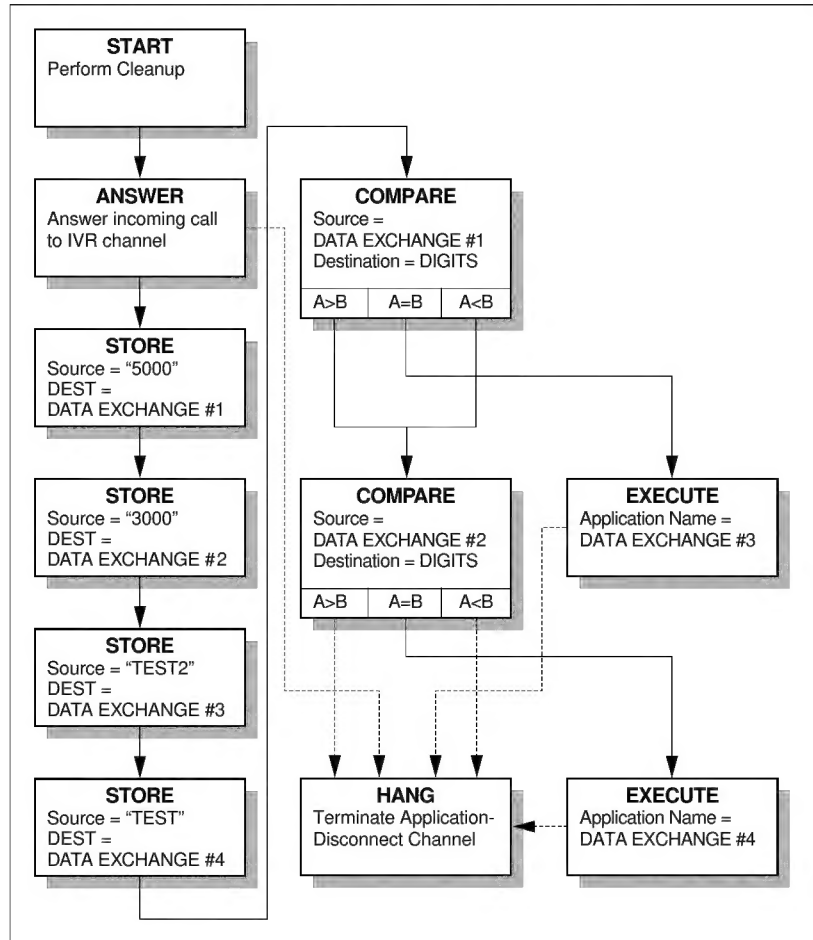


Figure 5-5
Sample application selector program for Meridian IVR



Dedicated IVR channel configuration

Figures 5-6 and 5-7 illustrate an example of a Meridian Mail system with twelve voice channels, which is connected to a Meridian IVR with six logical channels. There are six channels dedicated to IVR and six channels that are to be used exclusively for voice messaging.

The characteristics of this configuration example include the following:

- Voice messaging channels are in their own separate Message Center queue (ACD-DN 3600) with service set for VM in the VSDN table. PBX call routing is arranged to prevent IVR calls from being presented to ACD-DN 3600.
- Meridian IVR channels are in their own dedicated IVR queue (3800) with service set for ACCESS.

Note: Although a Class Value is required in the VSDN Table, it is replaced by the individual class values in the Channel Allocation Table. In other words, the Class Value for a dedicated logical Meridian IVR channel (which has a service of ACC, and Class Value in the Meridian Mail Channel Allocation Table) overrides the Class value in the VSDN table.

- Each ACCESS channel in Meridian Mail has a unique class, which is the default Meridian IVR configuration.
- Each Meridian IVR logical channel is dedicated to a specific Meridian Mail ACCESS channel using the class value for linkage.
- Meridian Mail channels are labeled "1 to 6"; Meridian IVR logical channels are labeled "0 to 5".
- The selector program shown in Figure 5-5, "Sample application selector program for Meridian IVR," on page 5-7 can be used if multiple applications are desired on Meridian IVR.



WARNING!

The MMTime clock synchronization process run at powerup and the Meridian IVR Voice Prompt Editor both require one voice channel configured as ALL in the Meridian Mail CAT table.

There are a number of advantages and limitations associated with this type of configuration.

Advantages

- Voice messaging and IVR calls do not compete for channels.
- Associating Meridian Mail channels to Meridian IVR channels is straightforward.
- Provides highest Grade of Meridian IVR Service (if sufficient channels are allocated to ACCESS).
- Up to 48 dedicated voice channels may be used with the Meridian ACCESS link if you are using a 9600 baud ACCESS link.

Limitations

- Reduced overall channel usage efficiency between Meridian Mail and Meridian IVR.
- Voice prompt modifications are not automatically applied on the next Meridian IVR call.
- Recorded messages in the IVR mailbox are not immediately available for the next Meridian IVR call.



WARNING!

Ensure that only IVR calls terminate onto dedicated channels. If the switch and Meridian Mail are configured such that a call intended for a Meridian Mail service is presented to an IVR dedicated channel, the Meridian Mail service will be provided at the expense of the IVR channel.

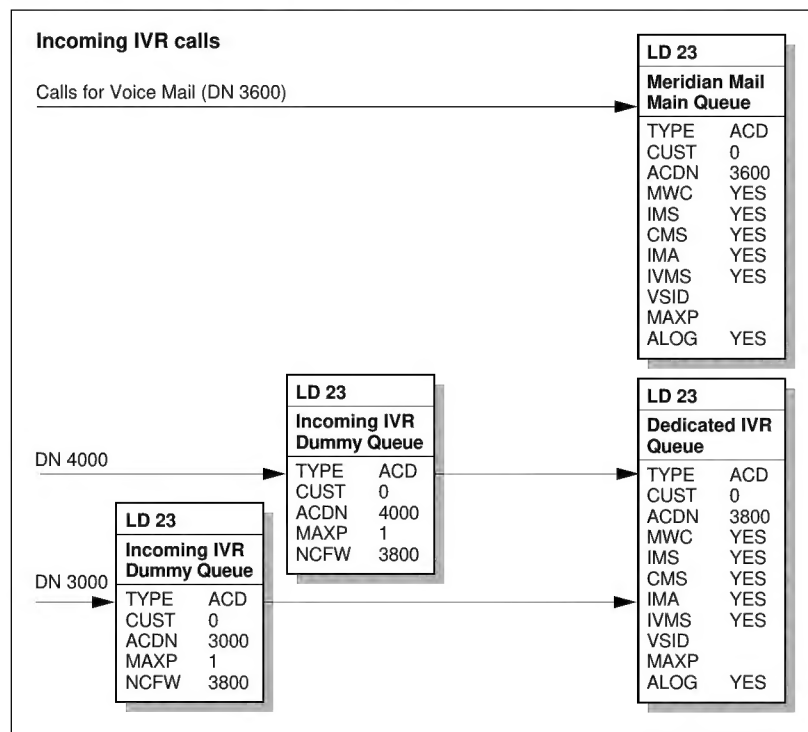
After the call is finished, it can take up to 15 seconds before Meridian IVR will attempt to re-acquire the channel and it may take much longer under heavy traffic considerations. Any IVR calls arriving during this time will not receive IVR treatment.

Figure 5-6
Meridian Mail/Meridian IVR configuration for the dedicated model

Meridian Mail					IVR logical sessions	Meridian IVR		
Voice Services DN Table		Channel Allocation Table				CLASS	IVR CHAN	ACQUISITION TYPE
3600 MERIDIAN MAIL SERVICE = VM	3800	2901	ACC	0		0	0	DEDICATED
3800 MERIDIAN IVR SERVICE = ACC CLASS = 0	3800	2902	ACC	1		1	1	DEDICATED
	3800	2903	ACC	2		2	2	DEDICATED
	3800	2904	ACC	3		3	3	DEDICATED
	3800	2905	ACC	4		4	4	DEDICATED
	3800	2906	ACC	5		5	5	DEDICATED
3000 MERIDIAN IVR SERVICE = ACC CLASS = 0	3600	2907	ALL					
	3600	2908	ALL					
	3600	2909	ALL					
	3600	2910	ALL					
	3600	2911	ALL					
	3600	2912	ALL					

Status	= ACTIVE
Direction	= INBOUND
Mailbox	= 6000
Mail Password	= 702000

Figure 5-7
Typical Meridian 1/SL-1 ACD configuration for the dedicated model



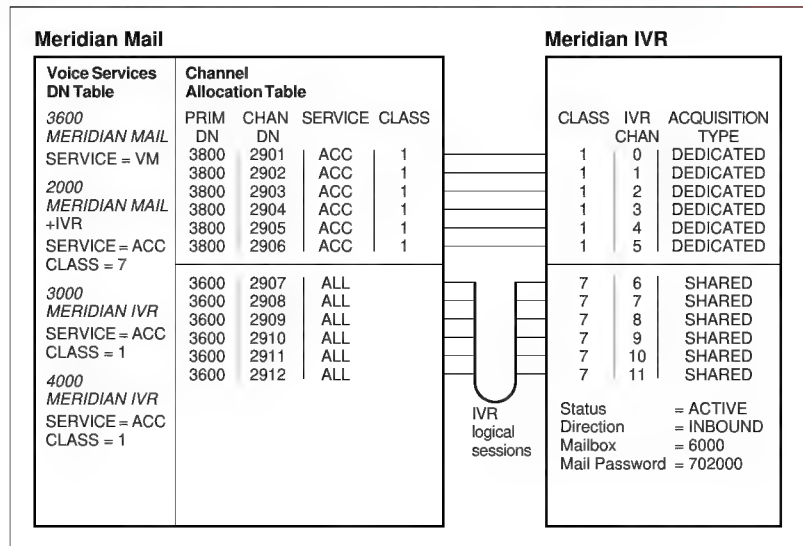
Hybrid Meridian IVR channel configuration

Figures 5-8 and 5-9 illustrate a Meridian Mail system with 12 voice channels, which is connected to a Meridian IVR system with 12 logical channels. The first six voice channels are configured as dedicated IVR ports. The other six channels are set up in a shared configuration with Voice Mail.

The characteristics of this configuration example include the following:

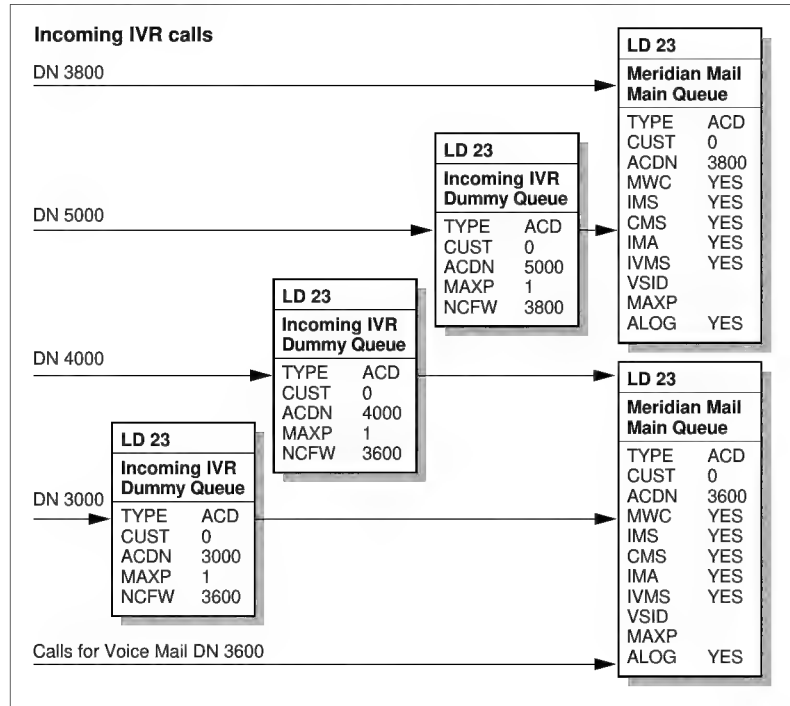
- two separate ACD queues handling IVR calls
- each IVR queue having two incoming call paths (see Figure 5-9)

Figure 5-8
Meridian Mail/Meridian IVR configuration for the hybrid model



A selector program should be used if multiple applications are to be made available within either of the voice channel queues (DNs 3800, 3600). An example of a selector program is shown in Figure 5-5.

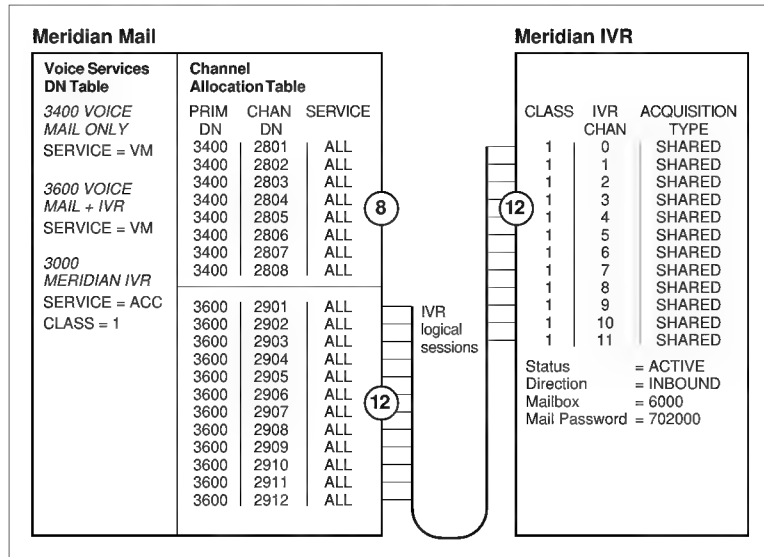
Figure 5-9
Meridian 1/SL-1 ACD configuration for the hybrid model



Shared configuration when available voice channels exceed IVR logical channels

Figure 5-10 illustrates a Meridian Mail system with 20 voice channels, which is connected to a Meridian IVR system with 12 logical channels. The 20 voice channels are configured for all services. The voice channels are split into two separate Message Center ACD queues. The queue to be shared with Meridian IVR calls contains channels whose numbers are equal to the available Meridian IVR logical channel capacity. The remaining voice channels are placed in the ACD queue which will be used exclusively for Voice Mail service.

Figure 5-10
8 Dedicated Voice Mail and 12 Shared Channels



This configuration allows dynamic use of the voice channels which are being shared with the Meridian IVR system. Calls dialed to DN 3400 will be answered by Meridian Mail Voice Messaging. When all eight of the ACD 3400 voice channels are busy, voice mail calls will overflow to the shared ACD-DN 3600, with a dialed DN of 3400, which will prompt Meridian Mail Voice Messaging to answer the call. Likewise, calls which are directed to DN 3000 will be given IVR treatment.

The characteristics of this configuration example include the following:

- Meridian Mail voice channels are configured for ALL services.
- The SHARED queue (ACD-DN 3600) is configured with a number of voice channels that is equal to the available logical channels in the Meridian IVR system.
- Acquisition type on the Meridian IVR system is SHARED for all logical channels.
- All of the available voice channels are available for Voice Mail usage.

There are a number of advantages and limitations associated with this type of configuration.

Advantages

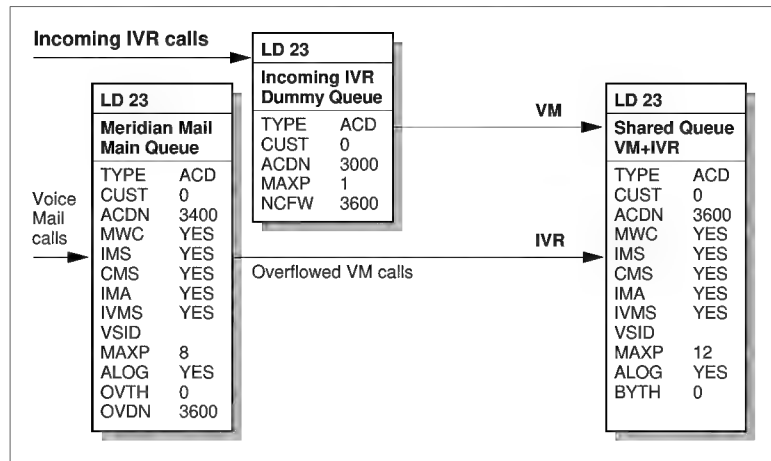
- Maximum efficiency is obtained with regard to Meridian Mail channel utilization.
- Voice prompt modifications are automatically applied on the next call after saving changes.
- Recorded messages in the IVR mailbox are immediately available for the next call after recording.

Limitations

- Incoming Meridian IVR calls may incur excessive delay in the queue if all Meridian Mail channels are busy because of high Voice Messaging traffic.
- Associating a Meridian Mail channel to a logical Meridian IVR channel is difficult because of random channel assignments for each incoming Meridian IVR call.
- The Meridian Mail system limits configuration to a maximum of 24 shared Meridian IVR channels for a 9600 baud ACCESS link.

Figure 5-11 provides an example of a PBX configured for this setup.

Figure 5-11
Configuring 20 Meridian Mail agents with 12 Meridian IVR logical channels



Configuration notes for Meridian Mail Release 9 systems

In Meridian Mail Release 9, the concept of a port has been expanded to embrace the concept of port type and port capability. There are now three different types of ports.

- Basic service voice ports. Services offered on these types of ports include the following:
 - ACCESS (this includes Meridian IVR)
 - Thru-dial Service
 - Voice Menu Service (if it does not invoke voice services that require full service ports)
 - Announcement Service
- Full service voice ports. Most Meridian Mail services are offered on full service voice ports. Services include the following:
 - Voice Messaging
 - Express Messaging

- networking services
- Full service multimedia ports. Multimedia ports are used to provide
 - fax services

Notes:

- 1 Features supported by basic service ports are also supported by full service ports. Full service multimedia ports support the same services as full service voice ports, and in addition support the multimedia services.
- 2 When configuring ACD agent queues in the Meridian 1, all ports servicing a particular queue must be of the same kind (having the same capacity and type). For example, a queue cannot be serviced by both full service voice ports and basic service voice ports.

The port type (voice versus multimedia) and capability (basic versus full) determine the features that can be processed through that port.

The remainder of this section will discuss how these different port types affect ACCESS and Meridian IVR.

For more information on the different types of ports, see the *Meridian Mail Site and Installation Planning Guide* (NTP 555-70x1-200) and the Voice Administration chapter in the *Meridian Mail Administration Guide* (NTP 555-7001-301 or 302/303).

Single port type

If a Meridian Mail system contains only a single port type (all basic voice, full service voice, or all full service multimedia), the ACCESS service (and Meridian IVR) will continue to function as it has in previous releases of Meridian Mail (namely, Release 7.5 and 8).

Mixed port types

If there is a mixture of port types on your Meridian Mail system, the number of ports available for Meridian IVR is restricted. The restrictions are as follows:

- When Meridian IVR requests acquisition of a voice channel, the system examines ALL channels which are in service.
- Of the channels in service, those with the lowest port capability are considered for use.
- If one of the lowest capability ports is idle, it is provided to Meridian IVR.

In [Table 5-1](#), the maximum number of ports available for Meridian IVR is two. Meridian IVR in this case cannot be provided on a full service port because basic ports are in service.

Table 5-1
Mixed port type configuration, ALL channels in service

Channel Allocation Table							Channel Status
#	PRIM DN	CHAN DN	Type	Capability		Outbound	Port Status
1	3650	2800	Voice		Basic	All	Idle
2	3650	2801	Voice		Basic	All	Idle
3	3650	2802	Voice	Full		All	Idle
4	3650	2803	Voice	Full		All	Idle
5	3650	2804	Voice	Full		All	Idle
6	3650	2805	Voice	Full		All	Idle
7	3650	2806	Voice	Full		All	Idle
8	3650	2807	Voice	Full		All	Idle

In **Table 5-2**, if the basic ports were taken out of service, the maximum number of channels available for Meridian IVR would now be six. This is because the lowest capability port in service is now a full service port, and there are six available. ACCESS can run on full service ports when there are no basic ports in service.

Table 5-2
Mixed port type configuration, basic ports out of service

Channel Allocation Table							Channel Status
#	PRIM DN	CHAN DN	Type	Capability		Outbound	Port Status
1	3650	2800	Voice		Basic	All	Out of Service
2	3650	2801	Voice		Basic	All	Out of Service
3	3650	2802	Voice	Full		All	Idle
4	3650	2803	Voice	Full		All	Idle
5	3650	2804	Voice	Full		All	Idle
6	3650	2805	Voice	Full		All	Idle
7	3650	2806	Voice	Full		All	Idle
8	3650	2807	Voice	Full		All	Idle

Meridian IVR configuration notes

Dedicated channels

Dedicated Meridian IVR logical channels must be associated by their access class with Meridian Mail voice channels that are not shared with any other Meridian Mail voice services.

If the Meridian 1 PBX call routing is such that non-IVR calls intended for a Meridian Mail voice service land on an IVR dedicated channel, the Meridian Mail service will be provided at the expense of the IVR channel. After the call is finished, it can take up to 15 seconds before IVR attempts to re-acquire the lost voice channel, and longer if another call is presented to that channel when Meridian IVR attempts to re-acquire it. Any IVR calls arriving during this time on this channel are not given IVR treatment.

All logical channels of shared acquisition type that have been configured in Meridian IVR must be set to run against the appropriate application. Otherwise calls will be presented repeatedly to the BUSIED OUT logical channels. Such calls will be answered and immediately transferred back to the originally-dialed out VSDN. This has the effect of sending the call to the back of the queue, or causing the original CLID to be replaced by the position ID of the Meridian Mail voice channel that answered and transferred the call.

Shared channels

Shared Meridian IVR logical channels must not be presented with more calls to VSDN's of a given Access Class than there are logical channels assigned to the given Access Class. Meridian 1 PBX call routing must be controlled to ensure that excess calls are not presented. Otherwise, new Meridian IVR calls will be reverted whenever all the logical channels of the given class are busy.

Access Class values

Different Access Class values should not be used to allow several applications to share the same Meridian Mail voice channels based on the Class of the VSDN. Use a selector application instead. It is impractical to use different Class values to select different applications, because this requires purchasing and configuring more Meridian IVR logical channels than the number of voice channels that are being used simultaneously for Meridian IVR calls.

To illustrate the impracticality, if three applications were to share eight voice channels, twenty-four Meridian IVR channels would have to be configured: eight for each of the three applications, so that a logical channel is always be available when a call is presented with the VSDN and Class that are associated with a particular application.

The recommended configuration is to use the same Class for all VSDNs that share the same Meridian Mail voice channel. The selector application is then assigned a range of logical channels which equal the number of voice channels that are to be shared. The VAD creates a selector application to select the appropriate application based on the originally-dialed VSDN, which is passed to Meridian IVR and stored in the DIGITS buffer.

Customer Controlled Routing

Customer Controlled Routing (CCR) can be used to control how the Meridian 1 PBX routes calls to Meridian IVR. CCR can queue the same call to up to four ACD queues simultaneously. CCR has the unique capability (GIVE IVR) of presenting a call to Meridian IVR while holding a place for that same call in other ACD queues.

Alternatively, or in conjunction with CCR, Meridian 1 PBX call routing can be controlled through ACD Timed Overflow, Enhanced (Timed) Overflow, Automatic Overflow, Controlled or Automatic Interflow, and Night Call Forward. Other PBX routing capabilities may also be applicable.

Meridian Mail voice channels may be grouped into several Message Center ACD-DNs to allow calls to be routed appropriately. PBX call routing is critical to control or restrict the sharing of Meridian Mail voice channels, and to limit the number of calls presented to VSDN's of a particular Access Class.

Voice Prompt Editor

The Voice Prompt Editor requires one voice channel configured as ALL in the channel allocation table (CAT).

MMTime synchronization

The MMTime synchronization process requires one voice channel configured as ALL in the CAT. Time synchronization occurs whenever the Meridian IVR system autoboots. To synchronize the time, use the root account and the MMtime command to secure the system for power down. Then press the reset button on the Application Processor, and the Meridian IVR system autoboots.

Configuring an isolated test environment

To configure an isolated test environment in a live system, three things must be controlled to separate test traffic from customer traffic:

- Meridian 1 PBX call routing of test traffic to separate Meridian Mail voice channels
- Meridian Mail presentation of test traffic to separate Meridian IVR logical channels
- Meridian IVR logical channel association with a separate mailbox for testing new or changed voice prompts

Call routing of test traffic

Assign one or two Meridian Mail voice channels to a separate Message Center ACD-DN to allow an isolated test environment to be established temporarily as needed. In normal operation when there is no test activity, customer traffic can be routed to the Meridian Mail test channel by CCR or ACD Timed Overflow. The corresponding Meridian IVR test channel is set to run the existing application when there is no test activity going on.

The test environment can be temporarily isolated when there is a need to test a new or modified application. This can be accomplished most conveniently by removing the Message Center ACD-DN for the test channel from the CCR script, or from the ACD Overflow DN list (OVDN), or from the target queue table (NACD) for Timed Overflow, so that customer traffic is no longer routed to the test channel. The corresponding Meridian IVR test channel is then set to run the new or modified application that is to be tested.

Presentation of test traffic

The Message Center ACD-DN for the test channel is defined in the Meridian Mail Voice Service DN Table as an Access service. Test traffic can be presented exclusively to the test channel by dialing the Access test DN.

For dedicated acquisition type, the Meridian Mail test channel is tied to the Meridian IVR test channel; therefore, changing the PBX routing also controls the presentation of test calls to the Meridian IVR test channel.

For shared acquisition type, the logical channel that is to be used for the isolated test environment must be reconfigured to make its Class the same as the Class of the test DN in the Meridian Mail Voice Service DN Table.

Meridian IVR must be restarted for the configuration change to take effect. Therefore using shared acquisition type for the test channel requires interrupting Meridian IVR service on all channels to switch the test channel between the normal operating environment and the isolated test environment.

Logical channel association with a separate mailbox

Some applications require the specific functional advantages of shared acquisition type, namely the immediate availability of new or changed voice prompts and Meridian IVR access to recorded voice messages on subsequent calls.

In most cases dedicated acquisition type is preferred for test channels that have to be switched frequently between customer traffic without interrupting Meridian IVR service on all channels.

For more information, refer to the appropriate sections on application development and testing on a live system found in the *Meridian IVR Application Development Guide* (NTP 555-9001-310) and *Meridian IVR System Administration Guide* (NTP 555-9001-300).

Meridian IVR interaction with Customer Controlled Routing

Meridian IVR and Customer Controlled Routing (CCR) can work together to provide Meridian IVR treatment to calls routed by CCR, while holding a place for that same call in other ACD queues. The Meridian 1 PBX must be running X11 Release 18 or later.

The CCR script command syntax for the GIVE IVR treatment is the following:

```
GIVE [INTERRUPTIBLE] IVR <acd dn> [WITH TREATMENT <treatment value>] [WITH PRIORITY (1, 2, 3, 4)]
```

For example:

```
GIVE INTERRUPTIBLE IVR 3650 WITH TREATMENT 4000 WITH PRIORITY 2
```

This CCR command provides IVR treatment, using Meridian Mail voice channels assigned to Message Center ACD-DN 3650 and Treatment DN 4000, to a call that may already be waiting in another ACD queue. If DN 4000 is defined in the Meridian Mail Voice Service DN Table as an Access service, Meridian IVR can handle the call while the caller continues to wait for an agent in the original queue. All Priority 1 calls will be given IVR service before this call, which was optionally assigned to Priority 2.

In this example, ACD-DN 3650 is the Message Center ACD-DN that contains the Meridian Mail voice channels that have been defined as IVR agents (it is *not* a dummy ACD-DN).

- The optional keyword INTERRUPTIBLE means the Meridian IVR treatment will be interrupted if an agent becomes available in the original queue.
- The optional WITH TREATMENT 4000 clause specifies the Voice Service DN to be used instead of the default Treatment DN. The optional with PRIORITY 2 clause specifies a priority lower than the default Priority 1.

For CCR to give IVR service while holding the caller's place in another ACD queue, the Meridian 1 PBX must be configured to specify that the voice channels contained in the Message Center ACD-DN are IVR agents.

Procedure 5-1

Configuring the PBX to provide IVR service

- 1** Load Overlay 23 from the Meridian 1 PBX administration terminal.
- 2** In the ACD block for the Message Center ACD-DN, respond YES to the IVR prompt.
- 3** Enter the optional default Treatment DN at the TRDN prompt. The default Treatment DN will be used if the optional WITH TREATMENT clause is omitted in the CCR script.